25

NIAGARA FALLS

Synopsis of Film

1. Outlet of Lake Erie.

   The Mighty Mass of Water Preparing for its Plunge over the Falls.

2. Approaching the Falls.

   Foot Bridge Connecting Goat Island with American Shore.

3. The Great Falls of the Niagara.

4. Under the Falls.

   Looking up at the Falls through Spray and Mist.

5. Below the Falls.

   The Hurrying Flood of the Whirlpool Rapids.

6. In the Gorge Below the Falls.

   Showing Depth of Rock Worn through by the Niagara River.

7. The Great Gorge.

   Niagara River on its Way to Lake Ontario.

NIAGARA FALLS

THE surface of Lake Superior is about 600 feet above sea level, while that of lakes Michigan, Huron and Erie is about 25 feet lower, practically all of the descent being at the Falls of St. Mary between lakes Superior and Huron. Lake Ontario is at an altitude of 247 ft. and most of the descent from Lake Erie is at Niagara Falls. Lake Erie and Lake Ontario occupy broad and relatively shallow depressions in two distinct and separate, though adjoining plains, that of Lake Erie lying at an elevation of about 325 feet above that of Lake Ontario, the two plains being separated by a north-facing escarpment about 300 feet in height, capped by beds of resistant limestone, which slant gently south and southwest, under the shallow basin of Lake Erie. As the distance between lakes Erie and Ontario is less than thirty-five miles, Niagara River, which flows northward from the east end of Lake Erie to near the west end of Lake Ontario, makes a great descent in its short course. When it first, ages ago, followed this course, it plunged down the escarpment face in a huge cataract, exerting a tremendous force as it fell. Since then it has cut back a narrow gorge about seven miles long, at the head of which the falls are now still cutting back southward toward Lake Erie at a rate of a few feet a year. As the capping limestones slant gently southward the top of the falls is not now so high as it was originally; and as the river in the gorge bottom descends northward in rushing rapids, the present base of the falls is not so low as the base of the escarpment where the falls originated. Hence the falls now are only about half as high as they were originally. But as rapids occur in the

river up stream from the falls because additional layers of limestone occur there, the top of the falls must in future gradually increase in elevation; hence the falls may, for a time, come to be higher than they are now; but on the other hand it is probable that the upstream ascent of the river-bed below the retreating falls will more than make up for the rise of the fall top, and the height of the falls will gradually decrease. When the falls retreat beyond the rapids, a continuous decrease in Fall height will occur.

The walls of the gorge show the rock layers which build up the Erie plain to a higher level than that of the Ontario plain. The uppermost layers are, as above noted, resistant limestones; below these is a series of weaker shales and sandstones. The recession of the falls seems to have been accomplished chiefly by the churning of the plunging waters in the weaker underlying layers, whereby they are worn back and the harder overlying layers are undermined; thus blocks of the capping layers fall away from time to time, and the falls retreat upstream. The recession already accomplished has probably required several tens or a few score of thousands of years. A much longer time will be required before recession at the present rate will push the falls back to Buffalo, and beyond, where they will gradually lower the level of Lake Erie, until it is converted into a river along the lowest line of the shallow lake basin; and by that time it is probable that the Falls will have been worn down to a smoothly graded river bed.

The Falls are now about 168 feet in height. They are at present divided by Goat Island into two parts; a narrow eastern part, known as the American Falls, measuring 1,060 feet across; and a broader western part, known as the Canadian or Horseshoe Falls, measuring 3,010 feet around its concave front. The river is deepest at the center of the Horseshoe Falls; and there the recession is at present most rapid, amounting to several feet a year;

The American Falls are receding very slowly because their volume of water is relatively small. It is probable that in several centuries the Horseshoe Falls will recede beyond the head (south end) of Goat Island; then no water will flow to the east of the Island and the American Falls will be left dry.

The plunging waters make a rushing and roaring sound and give forth clouds of spray or mist, in which a beautiful rainbow may be seen in clear weather. In winter time, much of the spray is frozen in huge mounds of ice on the side of the gorge near the base of the Falls. As the water leaps from the projecting cap of limestone, a space, known as "The Cave of the Winds," is left at the side of the Falls between the great curtain of water and hollowed out shales behind it. The plunge of the waters has excavated a basin for half a mile below the Falls as deep as the Falls are high. The water flows through the basin rather smoothly, and there a small steamboat, the "Maid of the Mist" carries visitors so close to the base of the cataract that they must wear rubber cloaks to avoid being drenched with the spray. Farther down the gorge the depth is less, and there the river rushes in billowy rapids.

The gorge makes a sharp turn near its mid length, and there the waters sweep around in the famous "Whirlpool." An electric railway carries visitors through the gorge, and gives fine views of the rapids, the whirlpool and the rock layers in the gorge walls. Three bridges cross the gorge a mile or more below the falls.

Part 2

GENERATING ELECTRIC POWER

In 1826 the State of New York granted to two petitioners as much of the waters of the Erie Canal as could be spared from the locks at Lockport for an annual rental of $200.

This lease was perpetual and transferable, and established a precedent which has led to the diversion of many thousand cubic feet a second from the waters of Lake Erie.

The people of the United States, alarmed at the increasing demands of water for manufacturing purposes and fearing that the diversion of so much water from the Falls would ruin them as a spectacle, finally, through Congress, passed a law fixing the maximum amount to be leased at 15,600 cubic feet a second.

The two largest users of the water of Lake Erie are the Niagara Falls River Company, operating on both the American and Canadian sides of the River, and the Niagara Falls Hydraulic River and Manufacturing Company. Of these two the former is by far the larger and at present is operating two immense power houses.

The water is led into a canal about a mile above the falls and flows through Niagara City to a point one-half mile below the Falls, where the power houses are situated. Here a tunnel, about 200 feet beneath the canal, leads to the bottom of the gorge below the falls. Large, vertical pipes, about 8 feet in diameter, alongside the canal, connect it with the tunnel. The water flows through gateways into the pipes. At the bottom of each pipe a turbine (water wheel), driven at great speed by the descending water develops 5,000 horse power in the electric dynamo in the power house above.

The electric power is transmitted by wire to tenants and customers of the company in Niagara Falls City and is carried southward by four transmission lines to North Tonawanda and to Buffalo where it is distributed for many and varied purposes.

It is interesting to note the variety of uses to which this current is put, and a list of tenants of the two great power companies will be found in the first reference listed below.

Questions, Topics, Suggestions

1. Name and locate the Great Lakes of the St. Lawrence system.
2. Name the sources of the Great Lakes' water supply.
3. Draw a profile along Niagara River to illustrate Ps. 1 and 2.
4. Tell the course of a vessel going from Duluth to New York City.
5. Describe the Cave of the Winds.
6. Why is the steamer at Niagara called the "Maid of the Mist?"
7. State your impressions of the Falls as viewed from the Maid of the Mist.
8. Draw diagram of the Falls showing Goat Island; relative location and width of the American and Canadian Falls.
9. What causes the Whirlpool Rapids?
10. Name and tell difference in construction of kinds of bridges crossing the Niagara River below the Falls. Different uses of each.
11. Describe the gorge of the Niagara River.
12. What power is derived from the Niagara River?
13. How is the power of the Niagara transmitted?
14. To what cities and distances?

References*

Kritz, C. W. Reports on existing water-power situation at Niagara Falls, etc. Gov. Printing Off. Wash. 1906. 22pp.

——, ——. Preservation of Niagara Falls. (Message of the President of the United States transmitting a letter from the Secretary of War, submitting additional information concerning the operation of the

United States' Lake Survey from June 29, 1906, to June 29, 1914. Wash. 1911. 22pp. illust.)

TARR, R. S. The Great Lakes and Niagara. Bull. Amer. Geog. Soc. New York. 1899. Vol. 31. No. 2. pp. 101-117 and 217-232. maps. diagrs.

GILBERT, G. K. Niagara (published by Supt. of New York), Niagara Park. 1890.

*The use of the Diagram of Niagara River between lakes Erie and Ontario, found in Davis's Elementary Physical Geography, will be found most helpful for teacher and pupils.

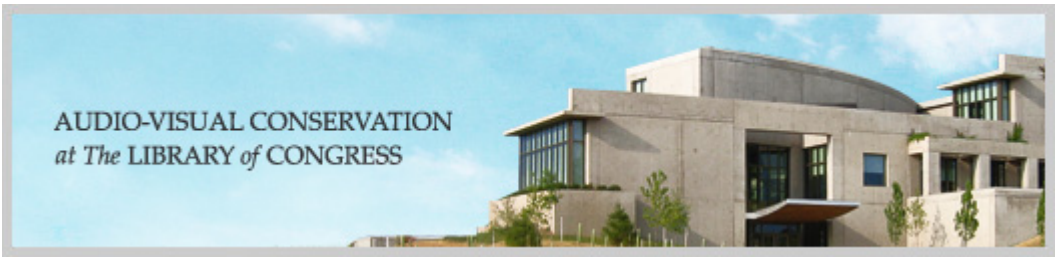
This document is from the Library of Congress
"Motion Picture Copyright Descriptions Collection, 1912-1977"

Collections Summary:

The Motion Picture Copyright Descriptions Collection, Class L and Class M, consists of forms, abstracts, plot summaries, dialogue and continuity scripts, press kits, publicity and other material, submitted for the purpose of enabling descriptive cataloging for motion picture photoplays registered with the United States Copyright Office under Class L and Class M from 1912-1977.

Class L Finding Aid:
https://hdl.loc.gov/loc.mbrsmi/eadmbrsmi.mi020004

Class M Finding Aid:
https://hdl.loc.gov/loc.mbrsmi/eadmbrsmi.mi021002



National Audio-Visual Conservation Center
The Library of Congress